業績目録(?原美廣)

著者	東北大学史料館
雑誌名	東北大学定年退職教員業績目録
号	2014-32
発行年	2015-03
URL	http://hdl.handle.net/10097/62872

東北大学定年退職教員業績目録第 2014－32 号

栁原　　美廣　教授　業績目録

平成 27 年 3 月
東北大学史料館

業績リスト（業績目録）

柳　原　美　廣

YANAGIHARA　Mihiro

最終所属部局	多元物質科学研究所	
職名	教授	
生年月日	1949 年 5 月 16 日生	
出身学校	金沢大学理学部物理学科	1974 年卒業
出身大学院	金沢大学大学院理学研究科修士課程	1978 年修了
	東京大学大学院理学系研究科博士課程	1982 年修了
取得学位	理学博士（東京大学）	1982 年
略歴	文部省高エネルギー物理学研究所非常勤講師	1982 年～1983 年
	東京都立大学理学部物理学科助手	1984 年～1987 年
	東北大学科学計測研究所助手	1987 年～1994 年
	東北大学科学計測研究所助教授	1994 年～2001 年
	東北大学多元物質科学研究所助教授	2001 年～2004 年
	東北大学多元物質科学研究所教授	2004 年～2015 年

＜研究活動に関する情報＞

専門分野

軟Ｘ線光学及び軟Ｘ線光物性学

研究課題

１．超薄膜の軟Ｘ線光学定数に関する研究

２．軟Ｘ線顕微鏡の開発と応用に関する研究

３．軟Ｘ線発光分光による多層膜界面の研究

所属学会

応用物理学会

日本物理学会

日本放射光学会

学会活動

精密工学会分科会委員	1995 年～1997 年
応用物理学会東北支部庶務幹事	1998 年～1999 年
応用物理学会会誌編集委員	2000 年～2001 年
応用物理学会東北支部庶務幹事	2004 年～2005 年
レーザー学会専門委員会委員	2007 年～2012 年
応用物理学会東北支部長	2010 年～2011 年
応用物理学会東北支部監査	2012 年～2013 年
応用物理学会諮問委員	2012 年～2014 年
Ｘ線結像光学研究会代表	2012 年～
応用物理学会東北支部諮問委員	2014 年～

会議の主催・運営

第 11 回Ｘ線結像光学シンポジウム実行委員長　　2011 年

学術受賞

日本学術振興会特別研究員等審査委員賞受賞　　2012 年
応用物理学会東北支部貢献賞受賞　　2014 年

競争的資金獲得状況

「Ｘ線結像光学」　　1989～1991 年度文部科学省科学研究費　重点領域研究（研究代表者：波岡　武）
「軟Ｘ線蛍光顕微鏡の開発 」　　1998～1999 年度文部科学省科学研究費　基盤研究（Ｂ）（２）（研究代表者）
「軟Ｘ線発光の偏光分光による ｓ ｐ 結合半導体の価電子緩和の研究」　　1999～2000 年度文部科学省科学研究費　基盤研究（Ｃ）（２）（研究代表者）
「軟Ｘ線発光分光による埋もれた界面評価法の開発」　2000 年度三菱財団研究助成金（研究代表者）
「軟Ｘ線定在波を用いた磁気円二色性による磁性多層膜界面の研究」　　2006～2007 年度文部科学省科学研究費　基盤研究（Ｃ）（研究代表者）
「レーザープラズマ軟Ｘ線光源を用いた超高分解能多元物質顕微鏡の開発」
2003～2007 年度文部科学省科学研究費　特別推進研究（研究代表者：山本正樹）

＜教育活動に関する情報＞

担当授業科目（学外含む）

東北大学

物理学Ⅰ（力学）（全学教育）　　1995 年～1996 年
応用光学（工学研究科応用物理学専攻）　　1996 年
放射光物理学Ｂ（工学研究科応用物理学専攻）1999 年～2003 年
光物性学（工学研究科応用物理学専攻）　　2004 年～2014 年
現代学問論「放射光科学の発展」（全学教育）2013 年
応用物理学特別研修（工学研究科応用物理学専攻）2011 年，2014 年

石巻専修大学（非常勤）

放射光の基礎と応用（理工学部）　　2009 年

＜大学運営に関する情報＞

学内委員

放射光科学専門委員会委員　　2004 年～2014 年
電子線科学研究センター（仮称）設置構想検討委員会委員　2005 年～2014 年
ｻｲｸﾛﾄﾛﾝ・ﾗｼﾞｵｱｲｿﾄｰﾌﾟ ｾﾝﾀｰ運営専門委員会委員　　2009 年～2013 年
ｻｲｸﾛﾄﾛﾝ・ﾗｼﾞｵｱｲｿﾄｰﾌﾟ ｾﾝﾀｰ運営専門委員会理工学利用部会委員　2009 年～2013 年
電子光理学研究センター運営委員会委員　　2009 年～2014 年
学務審議会委員　　2013 年～2014 年

＜社会活動に関する情報＞

行政機関・企業・NPO等参加

日本学術振興会特別研究員等審査会専門委員　　2010 年～2014 年

その他の学外社会活動

2005 世界物理年記念行事「光の不思議」	2005 年
みやぎ県民大学「ナノの世界を見る」	2008 年
リフレッシュ理科教室「光の不思議と太陽電池の体験実験」	2011 年
公開シンポジウム「放射性物質に対処する科学」	2011 年
特別シンポジウム「グリーンテクノロジー時代の幕開け」	2011 年

業績リスト

Ⅰ　著書・編書

1. “表面粗さの効果”　“ﾌｫﾄﾝﾌｧｸﾄﾘｰ BL-12A”　“ﾚｰｻﾞｰﾌﾟﾗｽﾞﾏX線による評価”　“軟X線領域における薄膜の光学定数の決定法”
   柳原美広
   「X線結像光学」波岡武・山下広順共編（培風館　東京　1999 年 7 月）
2. Multilayers for Soft and Hard X-rays
   M. Yanagihara and K. Yamashita
   “X-Ray Spectrometry: Recent Technological Advances” edited by K. Tsuji, J. Injuk, and R. van Grieken (John Wiley & Sons, 2004) 63-78.
3. “プラズマからのX線の発生”　“光学素子”
   柳原美広
   「実験化学講座 10 巻」宇田川康夫編（丸善　東京　2004 年）49-55, 163-176.
4. “物質の光応答”
   柳原美広
   「放射光科学入門」渡邊 誠・佐藤 繁共編（東北大学出版会　2004 年）72-100.

Ⅱ．論文等

○原著論文

1. Phase Diagram and Electrical Properties of $Cu_{2-\delta}Te$
   S. Miyatani, S. Mori, and M. Yanagihara, J. Phys. Soc. Jpn. **47** (1979) 1152-1158.
2. Luminescence Excitation by VUV Photons in Alkali and Silver Halides
   M. Yanagihara, Y. Kondo, and H. Kanzaki, J. Phys. Soc. Jpn. **52** (1983) 4397-4406.
3. Collapse of the f-Symmetric Final-State Wavefunction in the 3d Excitation Spectra of Atomic Xe, Cs and Ba
   B. Sonntag, T. Nagata, Y. Sato, Y. Satow, A. Yagishita, and M. Yanagihara, J. Phys. B: At. Mol. Phys. **17** (1984) L55-L58.
4. Soft X-Ray Spectral Characterization of Resist Polymer Using Synchrotron Radiation
   K. Mochiji, T. Kimura, H. Obayashi, and M. Yanagihara, Appl. Phys. Lett. **45** (1984) 251-252.
5. $K^+L_{2,3}$ Core Level Absorption in Potassium Halides
   M. Yanagihara, H. Maezawa, T. Sasaki, and Y. Iguchi, J. Phys. Soc. Jpn. **54** (1985) 3628-3631.
6. On the Valence States of Cerium in CeO_2
   T. Hanyu, H. Ishii, M. Yanagihara, T. Kamada, T. Miyahara, H. Kato, K. Naito, S. Suzuki, and T. Ishii, Solid State Commun. **56** (1985) 381-383.
7. Reflectance Spectra of $Ce_xLa_{1-x}Al_2$ in the VUV Region
   S. Sato, T. Miyahara, T. Koide, T. Shidara, H. Kato, T. Komatsubara, Y. Onuki, K. Naito, H. Fukutani, M. Niwano, A. Fujimori, M. Yanagihara, S. Suzuki, and T. Ishii, J. Magn. & Magn. Mater. **52** (1985) 190-192.
8. Inner Core Photoabsorption Spectra of Ce Metal, CeF_3 and CeO_2 Compounds
   T. Hanyu, T. Miyahara, T. Kamada, H. Ishii, M. Yanagihara, H. Kato, K. Naito, S. Suzuki, and T. Ishii, J. Magn. & Magn. Mater. **52** (1985) 193-194.
9. The Dependence of the 4d Absorption Spectra of La, LaF_3, Ba and BaF_2 on the Contracted 4f States
   S. Suzuki, T. Miyahara, T. Hanyu, H. Ishii, M. Yanagihara, T. Kamada, K. Naito, H. Kato, and T.

Ishii, J. Magn. & Magn. Mater. **52** (1985) 458-460.

10. Soft X-Ray Reflection from SiC, TiC, and WC Mirrors
    M. Yanagihara, M. Niwano, T. Koide, S. Sato, T. Miyahara, Y. Iguchi, S. Yamaguchi, and T. Sasaki, Appl. Opt. **25** (1986) 4586-4590.
11. Investigation of Carbon Contamination of Synchrotron Radiation Mirrors
    T. Koide, S. Sato, T. Shidara, M. Niwano, M. Yanagihara, A. Yamada, A. Fujimori, A. Mikuni, H. Kato, and T. Miyahara, Nucl. Instrum. & Methods **A246** (1986) 215-218.
12. The 4d Photoabsorption Spectra of La, LaF_3, Ba and BaF_2: Dependence on the Chemical and Structural Environment
    T. Miyahara, T. Hanyu, H. Ishii, M. Yanagihara, T. Kamada, H. Kato, K. Naito, and S. Suzuki, J. Phys. Soc. Jpn. **55** (1986) 408-413.
13. A New Approach to the Observation of the Resist in X-Ray Contact Microscopy
    K. Shinohara, S. Aoki, M. Yanagihara, A. Yagishita, Y. Iguchi, and A. Tanaka, Photochemistry & Photobiology **44** (1986) 401-403.
14. Glow-Discharge Cleaning in Oxygen of Carbon-Contaminated Optical Elements
    T. Koide, M. Yanagihara, Y. Aiura, S. Sato, H. Kato, and H. Fukutani, Physica Scripta **35** (1987) 313-317.
15. Resuscitation of Carbon-Contaminated Mirrors and Gratings by Oxygen-Discharge Cleaning. 1: Efficiency Recovery in the 4-40-eV Range
    T. Koide, M. Yanagihara, Y. Aiura, S. Sato, T. Shidara, A. Fujimori, H. Fukutani, M. Niwano, and H. Kato, Appl. Opt. **26** (1987) 3884-3894.
16. Soft X-Ray Reflection from Silicon and Quartz Mirrors
    M. Yanagihara, M. Niwano, T. Yamada, and S. Yamaguchi, Appl. Opt. **27** (1988) 563-566.
17. Soft X-Ray Optical Constants: Pt, Ag, and Cu
    M. Yanagihara, M. Niwano, T. Koide, and S. Sato, Jpn. J. Appl. Phys. **27** (1988) 666-669.
18. Intrinsic Luminescence Excitation Spectra near the K and Cl 1s Edges in KCl and KBr
    M. Yanagihara, Y. Kondo, T. Hanyu, and S. Yamaguchi, Solid State Commun. **68** (1988) 345-348.
19. Resuscitation of Carbon-contaminated Mirrors and Gratings by Oxygen-Discharge Cleaning. 2: Efficiency Recovery in the 100-1000-eV Range
    T. Koide, T. Shidara, M. Yanagihara, and S. Sato, Appl. Opt. **27** (1988) 4305-4313.
20. Optical Constants of CVD-SiC Mirrors Produced by Different Processes from 200 to 1000 eV
    M. Yanagihara, S. Sato, T. Koide, S. Takeda, and A. Iijima, Jpn. J. Appl. Phys. **28** (1989) 128-131.
21. SiC Mirror Development at the Photon Factory
    S. Sato, A. Iijima, S. Takeda, M. Yanagihara, T. Miyahara, A. Yagishita, T. Koide, and H. Maezawa, Rev. Sci. Instrum. **60** (1989) 1479-1485.
22. Multilayer Mirrors for Use as a Wavelength-Selective Filter around 100 eV
    M. Yamamoto, M. Yanagihara, A. Arai, J. Cao, S. Nakayama, T. Mizuide, and T. Namioka, Rev. Sci. Instrum. **60** (1989) 2010-2013.
23. Optical Constants of Superthin Gold Films for Soft X rays
    M. Yanagihara, J. Cao, M. Yamamoto, A. Arai, S. Nakayama, T. Mizuide, and T. Namioka, Rev. Sci. Instrum. **60** (1989) 2014-2017.
24. Optical Constants of SiC Mirrors Produced by Different Methods for Photons of 60-1000 eV
    M. Yanagihara, J. Cao, M. Yamamoto, T. Namioka, S. Sato, T. Koide, S. Takeda, and A. Iijima, Rev. Sci. Instrum. **60** (1989) 2030-2033.

25. Apparatus for Characterizing the VUV and Soft X-Ray Optical Elements at the Photon Factory
S. Mitani, T. Namioka, M. Yanagihara, K. Yamashita, J. Fujita, S. Morita, T. Harada, T. Sasaki, S. Sato, T. Miyahara, T. Koide, A. Mikuni, W. Okamoto, and H. Maezawa, Rev. Sci. Instrum. **60** (1989) 2216-2218.
26. Resonant Photoemission Study on Valence Band Satellites of Cu_xNi_{1-x} and Ag_xPd_{1-x} Alloy Systems
T. Miyahara, T. Hanyu, H. Ishii, H. Kataura, M. Yanagihara, A. Fujimori, T. Koide, and H. Kato, J. Phys. Soc. Jpn. **58** (1989) 2160-2166.
27. Reflectance Degradation of Soft X-Ray Multilayer Filters upon Exposure to Synchrotron Radiation
M. Yamamoto, M. Yanagihara, A. Arai, J. Cao, T. Mizuide, H. Kimura, T. Maehara, and T. Namioka, Physica Scripta **41** (1990) 21-24.
28. Soft X-Ray Reflectometer with a Laser-Produced Plasma Source
S. Nakayama, M. Yanagihara, M. Yamamoto, H. Kimura, and T. Namioka, Physica Scripta **41** (1990) 754-757.
29. Soft X-Ray Multilayers Fabricated by Electron-Beam Deposition
M. Sudoh, R. Yokoyama, M. Sumiya, M. Yamamoto, M. Yanagihara, and T. Namioka, Opt. Eng. **30** (1991) 1061-1066.
30. Optical Constants of Very Thin Gold Films in the Soft X-Ray Region
M. Yanagihara, J. Cao, M. Yamamoto, A. Arai, S. Nakayama, T. Mizuide, and T. Namioka, Appl. Opt. **30** (1991) 2807-2814.
31. Intrinsic Luminescence Excitation Spectrum around the Cl 1s Absorption Edge in KCl
Y. Kondo, S. Hoshina, M. Yanagihara, H. Kimura, T. Hanyu, and S. Yamaguchi, Solid State Commun. **80** (1991) 431-434.
32. Performance of a Wideband Soft X-Ray Polarizer
T. Maehara, H. Kimura, H. Nomura, M. Yanagihara, and T. Namioka, Appl. Opt. **30** (1991) 5018-5020.
33. Experiment on Direct Irradiation of a Beryllium Window by Undulator Radiation
S. Asaoka, H. Maezawa, Y. Kamiya, and M. Yanagihara, Rev. Sci. Instrum. **63** (1992) 473-476.
34. Full Polarization Measurement of Synchrotron Radiation with Use of Soft X-Ray Multilayers
H. Kimura, M. Yamamoto, M. Yanagihara, T. Maehara, and T. Namioka, Rev. Sci. Instrum. **63** (1992) 1379-1382.
35. Soft X-Ray Multilayer Phase Shifter
M. Yamamoto, M. Yanagihara, H. Nomura, K. Mayama, and H. Kimura, Rev. Sci. Instrum. **63** (1992) 1510-1512.
36. Performance of a Wideband Multilayer Polarizer for Soft X Rays
M. Yanagihara, T. Maehara, H. Nomura, M. Yamamoto, T. Namioka, and H. Kimura, Rev. Sci. Instrum. **63** (1992) 1516-1518.
37. In Situ Performance Tests of Soft X-Ray Multilayer Mirrors Exposed to Synchrotron Radiation from a Bending Magnet
M. Yanagihara, T. Maehara, S. Gunadi, M. Asano, and T. Namioka, Appl. Opt. **31** (1992) 972-976.
38. Soft X-Ray (97-eV) Phase Retardation Using Transmission Multilayers
J. B. Kortright, H. Kimura, V. Nikitin, K. Mayama, M. Yamamoto, and M. Yanagihara, Appl. Phys. Lett. **60** (1992) 2963-2965.
39. Effects of Core-Level Excitation on the F-Center Formation in KCl and KBr at Liquid-Helium

Temperature

Y. Kondo, S. Hoshina, S. Hirota, I. Goto, Y. Kon'no, M. Yanagihara, H. Kimura, and T. Hanyuu, Phys. Rev. Lett. **70** (1993) 810-813.

40. Optical Constants of Very Thin Pt and Rh Films Determined from Soft-X-Ray Reflectance and Photoelectric Yield Measurements

T. Maehara, M. Yanagihara, M. Yamamoto, and T. Namioka, Nucl. Instrum. & Methods **B74** (1993) 362-367.

41. Spatial Power Distribution of Multipole-Wiggler Radiation Measured by Photocalorimetric Method

M. Yanagihara, Y. Goto, S. Asaoka, and H. Maezawa, Nucl. Instrum. & Methods **A332** (1993) 326-328.

42. Stability of Sputtered Mo/BN, W/BN, Mo/B_4C, and W/B_4C Soft-X-Ray Multilayers under Exposure to Multipole-Wiggler Radiation

M. Yanagihara, K. Mayama, Y. Goto, I. Kusunoki, S. Asaoka, and H. Maezawa, Nucl. Instrum. & Methods **A334** (1993) 638-642.

43. Simultaneous Determination of the Optical Constants and Thickness of Very Thin Films by Using Soft-X-Ray Reflectance Measurements

J. Cao, M. Yanagihara, M. Yamamoto, Y. Goto, and T. Namioka, Appl. Opt. **33** (1994) 2013-2017.

44. Thermal Stability of Sputtered Mo/X and W/X (X = BN:O, B_4C:O, Si, and C) Multilayer Soft-X-Ray Mirrors

H. Okada, K. Mayama, Y. Goto, I. Kusunoki, and M. Yanagihara, Appl. Opt. **33** (1994) 4219-4224.

45. Soft-X-Ray Emission Spectrometer Equipped with a Multilayer Rotating Analyzer for Study of the Polarized Emission

M. Yanagihara, Y. Goto, N. Miyata, and M. Furudate, Rev. Sci. Instrum. **66** (1995) 1595-1597.

46. Polarization Measurement of SR from a Helical Undulator Using a Quarter-Wave Plate for a Wavelength of 12.8 nm

H. Kimura, T. Miyahara, Y. Goto, K. Mayama, M. Yanagihara, and M. Yamamoto, Rev. Sci. Instrum. **66** (1995) 1920-1922.

47. High Heat Load Vacuum Ultraviolet Mirror Development in Japan

S. Sato, H. Maezawa, M. Yanagihara, E. Ishiguro, and S. Matsuo, Opt. Eng. **34** (1995) 377-387.

48. F-Center Formation by Br K-Hole Auger Decay in KBr

M. Yanagihara, S. Hirota, and Y. Kondo, Phys. Rev. **B53** (1996) 13386-13392.

49. Consistency of the Surface Roughness Determined from Soft-X-Ray Reflectance and Surface Profiles Measured Using a Scanning Tunnelling Microscope: Coherence Length of the Soft X-Rays

M. Yanagihara, T. Sasaki, M. Furudate, and M. Yamamoto, Opt. Rev. **3** (1996) 65-70.

50. Polarization Study on the B 1s Exciton Emissions from h-BN and B_2O_3

M. Yanagihara, N. Miyata, M. Furudate, T. Ejima, and Makoto Watanabe, J. Electron Spectrosc. Relat. Phenom. **79** (1996) 187-190.

51. Thin Film Ellipsometry at a Photon Energy of 97eV

M. Yamamoto, K. Mayama, H. Kimura, Y. Goto, and M. Yanagihara, J. Electron Spectrosc. Relat. Phenom. **80** (1996) 465- 468.

52. Development and Performance of a Profilometer for Measurement of Mirror Surface Figure

H. Sugawara, M. Yanagihara, S. Asaoka, M. Okusawa, and H. Maezawa, J. Electron Spectrosc.

Relat. Phenom. **80** (1996) 485-488.

53. Effects of the Core Hole Potential on the B 1s Emission in Hexagonal BN
M. Yanagihara, N. Miyata, T. Ejima, M. Watanabe, and Y. Kayanuma, J. Phys. Soc. Jpn. **66** (1997) 1626-1629.
54. Effect of Coulomb Interaction in the Resonant X-Ray Emission Spectra of Hexagonal BN
K. Noba, Y. Kayanuma, and M. Yanagihara, J. Phys. Soc. Jpn. **67** (1998) 664-669.
55. Zero-Order Free, Multilayer-Coated Laminar Grating in the 31-nm Region
M. Toyoda, N. Miyata, M. Yanagihara, and M. Watanabe, Jpn. J. Appl. Phys. **37** (1998) 2066-2067.
56. Characterization of a Multilayer Soft X-ray Reflector Fabricated by Pulsed Laser Deposition
Dong-Eon Kim, Soo-Mi Lee, In-Joon Jeon, and M. Yanagihara, Appl. Surface Sci. **127-129** (1998) 531-535.
57. A Simple Accurate Method of Alignment of Beamline Optics with the Use of EUV Multilayer Polarizers
M. Yamamoto, M. Furudate, M. Yanagihara and H. Kimura, J. Synchrotron Rad. **5** (1998) 696-698.
58. Time-resolved Fluorescent X-ray Interference
Y.C. Sasaki, Y. Suzuki, H. Yamanashi, A. Arai and M. Yanagihara, J. Synchrotron Rad. **5** (1998) 1075-1078.
59. Comparison of Mechanically Ruled versus Holographically Varied Line-spacing Gratings for a Soft-X-ray Flat-field Spectrograph
T. Yamazaki, E. Gullikson, N. Miyata, M. Koike, Y. Harada, S. Mrowka, U. Kleineberg, J. Underwood, M. Yanagihara, and K. Sano, Appl. Opt. **38** (1999) 4001-4003.
60. Polarization Performance of EUV Transmission Multilayers as $\lambda/4$ and $\lambda/2$ Plates at a Photon Energy of 97 eV
M. Yamamoto, H. Nomura, M. Yanagihara, M. Furudate, and M. Watanabe, J. Electron Spectrosc. Relat. Phenom. **101-103** (1999) 869-873.
61. Buried Interfaces in Mo/Si Multilayers Studied by Soft-X-Ray Emission Spectroscopy
N. Miyata, S. Ishikawa, M. Yanagihara, and M. Watanabe, Jpn. J. Appl. Phys. **38** (1999) 6476-6478.
62. A Soft-X-Ray Imaging Microscope with a Multilayer-Coated Schwarzschild Objective: Imaging Tests
M. Toyoda, Y. Shitani, M. Yanagihara, T. Ejima, M. Yamamoto, and M. Watanabe, Jpn. J. Appl. Phys. **39** (2000) 1926-1929.
63. Tracking of Individual Nanocrystals Using Diffracted X Rays
Y.C. Sasaki, Y. Suzuki, N. Yagi, S. Adachi, M. Ishibashi, H. Suda, M. Toyoda, and M. Yanagihara, Phys. Rev. E **62** (2000) 3843-3847.
64. Electronic Structure of Charge Transfer Salts
E.Z. Kurmaev, A. Moewes, U. Schwingenschloegl, R. Claessen, M.I. Katsnelson, H. Kobayashi, S. Kagoshima, Y. Misaki, D.L. Ederer, K. Endo, and M. Yanagihara, Phys. Rev. B **64** (2001) 233107-1~4.
65. Efficiency and Polarization Performance of a Multilayer-coated Laminar Grating in the 6.5–6.9-nm Wavelength Region
S. Ishikawa, T. Imazono, T. Hatano, M. Yanagihara, and M. Watanabe, Appl. Opt. **41** (2002) 763-767.
66. Electronic Structure of MgB_2: X-ray Eemission and Absorption Studies

E.Z. Kurmaev, I.I. Lyakhovskaya, J. Kortus, A. Moewes, N. Miyata, M. Demeter, M. Neumann, M. Yanagihara, M. Watanabe, T. Muranaka, and J. Akimitsu, Phys. Rev. B **65** (2002) 134509-1~4.

67. π Emission Anomaly in the N 1*s* Resonance Emission from Hexagonal BN: Effects of the Core Hole Potential
    N. Miyata, M. Yanagihara, M. Watanabe, Y. Harada, and S. Shin, J. Phys. Soc. Jpn. **71** (2002) 1761-1764.
68. Buried Interfaces of Heat-loaded Mo/Si Multilayers Studied by Soft-X-ray Emission Spectroscopy
    N. Miyata, T. Imazono, S. Ishikawa, A. Arai, M. Yanagihara, and M. Watanabe, Surface Rev. Lett. **9** (2002) 663-668.
69. Si $L_{2,3}$ Emission Spectra from the Interfaces in Antiferromagnetically Coupled Fe/Si Multilayers
    T. Imazono, N. Miyata, O. Kitakami, and M. Yanagihara, Surface Rev. Lett. **9** (2002) 669-674.
70. X-ray Emission and Absorption Spectra and Electronic Structure of MgB_2
    E.Z. Kurmaev, I.I. Lyakhovskaya, J. Kortus, M. Demeter, T. Imazono, N. Miyata, M. Yanagihara, M. Watanabe, M. Neumann, T. Muranaka, and J. Akimitsu, Surface Rev. Lett. **9** (2002) 1097-1102.
71. Local Electronic Structure of Doping Atoms in $MA_2Ca_{n-1}Cu_nO_{2n+3}$ High-T_c Superconductors with [M-12(n-1)n] Type Structures
    Z. Kurmaev, A. Moewes, N.D. Zhigadlo, E. Takayama-Muromachi, I.A. Nekrasov, O.A. Bureev, G.T. Woods, T.A. Callcott, Yu.M. Yarmoshenko, S.N. Shamin, D.L. Ederer and M. Yanagihara, Surface Rev. Lett. **9** (2002) 1345-1350.
72. Probing oxygen and nitrogen bonding sites in chitosan by X-ray emission
    E.Z. Kurmaev, S. Shin, M. Watanabe, R. Eguchi, Y. Ishiwata, T. Takeuchi, A. Moewes, D.L. Ederere, Y. Gao, M. Iwami, and M. Yanagihara, J. Electron Spectrosc. Relat. Phenom. **125** (2002) 133–138.
73. Polarization Performance of a New Spectrometer Based on a Multilayer-Coated Laminar Grating in the 150 – 190-eV Region
    S. Ishikawa, S. Ichikura, T. Imazono, S. Otani, T. Oguchi, and M. Yanagihara, Opt. Rev. **10** (2003) 58-62.
74. B K Emission Spectra for MgB_2 and Al-doped MgB_2
    N. Miyata, T. Imazono, M. Yanagihara, M. Watanabe, T. Muranaka, and J. Akimitsu, J. Phys. Soc. Jpn. **72** (2003) 1810-1811.
75. Soft-X-ray Emission Studies of Buried Interfaces in Multilayers
    T. Imazono, N. Miyata, and M. Yanagihara, Transactions of Materials Res. Soc. Jpn. **28** (2003) 107-112.
76. Interdiffused Layers in Antiferromagnetically-coupled Fe/Si Multilayers Studied by Soft-X-ray Fluorescence Spectroscopy
    T. Imazono, Y. Hirayama, S. Ichikura, O. Kitakami, M. Yanagihara, and M. Watanabe, Jpn. J. Appl. Phys. **43** (2004) 4327-4333.
77. Study of Interdiffused Layers near the Surface of Multilayers by Total-reflection Soft-X-ray Fluorescence Spectroscopy
    T. Imazono, Y. Hirayama, S. Ichikura, O. Kitakami, M. Yanagihara, and M. Watanabe, Jpn. J. Appl. Phys. **43** (2004) 4334-4337.
78. Studies of Multilayer Structure in Depth Direction by Soft X-ray Spectroscopy

M. Watanabe, T. Ejima, N. Miyata, T. Imazono, and M. Yanagihara, Nuclear Scientific Technologies **17** (2006) 257-267.

79. X-ray Magnetic Circular Dichroism Studies for Fe/Si Interfaces Using Standing Waves
K. Sato, M. Sugawara, T. Jinno, M. Toyoda, T. Hatano, A. Arai, and M. Yanagihara, Journal of Physics: Conference Series **83** (2007) 012012-1-6.
80. Frustration of Direct Photoionization of Ar Clusters in Intense Extreme Ultraviolet Pulses from a Free Electron Laser
H. Iwayama, K. Nagaya, M. Yao, H. Fukuzawa, X.-J. Liu, G. Pruemper, M. Okunishi, K. Shimada, K. Ueda, T. Harada, M. Toyoda, M. Yanagihara, M. Yamamoto, K. Motomura, N. Saito, A. Rudenko, J. Ullrich, L. Foucar, A. Czasch, R. Doerner, M. Nagasono, A. Higashiya, M. Yabashi, T. Ishikawa, H. Ohashi, and H. Kimura, Journal of Physics B: Atomic, Molecular and Optical Physics **42** (2009) 134019-1-134019-5.
81. Design Study of Two-aspherical-mirror Anastigmat with Reduced Sensitivities to Misalignments: Correction of Higher-order Aberrations
M. Toyoda, and M. Yanagihara, Journal of Physics: Conference Series **186** (2009) 012076.
82. Momentum Spectroscopy of Fragment ions Emitted from Xe Clusters Irradiated by EUV-FEL at SPring-8
H. Fukuzawa, X.-J. Liu, K. Motomura, G. Pruemper, M. Okunishi, K. Shimada, K. Ueda, T. Harada, M. Toyoda, M. Yanagihara, M. Yamamoto, K. Nagaya, H. Iwayama, M. Yao, N. Saito, A. Rudenko, J. Ullrich, L. Foucar, A. Czasch, R. Doerner, M. Nagasono, A. Higashiya, M. Yabashi, T. Ishikawa, H. Ohashi, and H. Kimura, Journal of Physics: Conference Series **194** (2009) 012052-1-012052-7.
83. Multi-Coincidence Ion Detection System for EUV-FEL Fragmentation Experiments at SPring-8
K. Motomura, L. Foucar, A. Czasch, N. Saito, O. Jagutzki, H. Schmidt-Boecking, R. Doerner, X.-J. Liu, H. Fukuzawa, G. Pruemper, K. Ueda, M. Okunishi, K. Shimada, T. Harada, M. Toyoda, M. Yanagihara, M. Yamamoto, H. Iwayama, K. Nagaya, M. Yao, A. Rudenko, J. Ullrich, M. Nagasono, A. Higashiya, M. Yabashi, T. Ishikawa, H. Ohashi, and H. Kimura, Nuclear Instruments and Methods in Physics Research: Section A **606** (2009) 770-773.
84. Dead-time-free Ion Momentum Spectroscopy of Multiple Ionization of Xe Clusters Irradiated by EUV Free-electron Laser Pulses
H. Fukuzawa, X.-J. Liu, G. Pruemper, M. Okunishi, K. Shimada, K. Ueda, T. Harada, M. Toyoda, M. Yanagihara, M. Yamamoto, H. Iwayama, K. Nagaya, M. Yao, K. Motomura, N. Saito, A. Rudenko, J. Ullrich, L. Foucar, A. Czasch, R. Doerner, M. Nagasono, A. Higashiya, M. Yabashi, T. Ishikawa, H. Ohashi, and H. Kimura, Physical Review A **79** (2009) 031201-1-031201-4.
85. High Throughput and Wide Field of View EUV Microscope for Blur-free One-shot Imaging of Living Organisms
T. Ejima, F. Ishida, H. Murata, M. Toyoda, T. Harada, T. Tsuru, T. Hatano, M. Yanagihara, M. Yamamoto, and H. Mizutani, Optics Express **18** (2010) 7203-7209.
86. High Throughput and Wide Field of View EUV Microscope for Blur-free One-shot Imaging of Living Organisms
T. Ejima, F. Ishida, H. Murata, M. Toyoda, T. Harada, T. Tsuru, T. Hatano, M. Yanagihara, M. Yamamoto, and H. Mizutani, The virtual Journal Biomedical Optics **5** (2010).
87. Two-dimensional Detector for High Resolution Soft X-ray Imaging

T. Ejima, S. Ogasawara, T. Hatano, M. Yanagihara, and M. Yamamoto, "*SRI: 10th International Conference on Radiation Instrumentation*", ed. by R. Garrett et al., AIP, CP**1234** (2010) 053104.

88. 超高精細バイオイメージング用波面補正軟Ｘ線多層膜ミラーの開発
津留俊英，羽多野忠，原田哲男，豊田光紀，江島丈雄，柳原美廣，山本正樹，光学, **39(5)** (2010.5) 3-8.
89. Aplanatic Three-Mirror Objective for High-Magnification Soft X-Ray Microscopy
M. Toyoda, T. Jinno, and M. Yanagihara, AIP Conference Proceedings **1365** (2011.9) 176-179.
90. At-Wavelength Extreme Ultraviolet Lithography Mask Observation Using a High-magnification Objective with Three Multilayer Mirrors
M. Toyoda, K. Yamasoe, T. Hatano, M. Yanagihara, A. Tokimasa, T. Harada, T. Watanabe, and H. Kinoshita, Appl. Phys. Express **5** (2012.10) 112501.
91. Investigation of Sample Preparation Methods for EUV Imaging of Fixed Bio-cells
T. Ejima, F. Ishida, Y. Neichi, and M. Yanagihara, J. Phys.: Conf. Series **425** (2013.1) 182007.
92. Development of Soft X-ray Contact Microscope for In-situ Identification of Organelles
T. Ejima, Y. Neichi, F. Ishida, and M. Yanagihara, J. Phys.: Conf. Series **425** (2013.1) 182008.
93. Chemical Shift Images of Organelles in Leydig Cells of Mice Testes
T. Ejima, Y. Neichi, M. Yanagihara, M. Kado, M. Ishino, K. Yasuda, and S. Tamotsu, J. Phys.: Conf. Series **463** (2013.10) 012047.
94. Development of Soft X-ray Contact-type Microscope and Application to Micro-spectroscopy in Water-window
T. Ejima, Y. Neichi, F. Ishida, and M. Yanagihara, J. Phys.: Conf. Series **463** (2013.10) 012055.
95. Multilayer Coated Grazing Incidence Condenser for Large Numerical Aperture Objective at Wavelength of 4.5 nm
T. Ejima, T. Hatano, K. Ohno, T. Fukayama, S. Aihara, M. Yanagihara, and T. Tsuru, Applied Optics **53(29)** (2014.10) 6846-6852.
96. Demonstrating 30-nm Spatial Resolution of Three-multilayer-mirror Objective for Extreme Ultraviolet Microscopy: Imaging Test by Observing Lithography Mask
M. Toyoda, K. Yamasoe, A. Tokimasa, K. Uchida, T. Harada, T. Terasawa, T. Amano, T. Watanabe, M. Yanagihara, and H. Kinoshita, Applied Physics Express **7** (2014.9) 102502-1-102502-4.

○会議報告（プロシーディング）

1. Multilayer Reflection Filters for Soft X-Rays
M. Yanagihara, M. Yamamoto, A. Arai, J. Cao, and T. Namioka, SPIE Proceedings Vol. **984**, X-Ray Multilayers for Diffractometers, Monochromators, and Spectrometers (1988) 228-231.
2. Polarization Measurement in the Soft X-Ray Region
H. Kimura, T. Inoue, T. Maehara, M. Yamamoto, M. Yanagihara, and T. Namioka, Book of Abstr., 15th Int. Conf. X-Ray and Inner-Shell Processes (Knoxville) 1990, p. B08.
3. Soft X-Ray Multilayers Fabricated by Electron-Beam Deposition
M. Sudoh, R. Yokoyama, M. Sumiya, M. Yamamoto, M. Yanagihara, and T. Namioka, SPIE Proceedings Vol. **1343**, X-Ray/EUV Optics for Astronomy, Microscopy, Polarimetry, and Projection Lithography (1990) 14-24.
4. Multilayers for Soft X-Ray Optics
T. Namioka, M. Yamamoto, M. Yanagihara, and M. Koike, OSA Proceedings on Soft-X-Ray

Projection Lithography 1991, Vol. **12** (1991) 87-91.

5. Thickness Dependence of the Optical Constants of Thin Pt, Au, and Rh Films in the Soft-X-Ray Region
   M. Yanagihara, T. Maehara, M. Yamamoto, and T. Namioka, SPIE Proceedings Vol. **1720**, Optical Fabrication, Testing, and Surface Evaluation (1992) 246-251.
6. Design, Fabrication, and Polarization of Soft-X-Ray Transmission Multilayers
   H. Nomura, K. Mayama, T. Sasaki, M. Yamamoto, and M. Yanagihara, SPIE Proceedings Vol. **1720**, Optical Fabrication, Testing, and Surface Evaluation (1992) 395-401.
7. Soft-X-Ray Polarization Measurement with a Laboratory Reflectometer
   M. Yamamoto, K. Mayama, H. Nomura, H. Kimura, M. Yanagihara, and T. Namioka, SPIE Proceedings Vol. **1720**, Optical Fabrication, Testing, and Surface Evaluation (1992) 390-394.
8. Stability Tests for Soft X-Ray Multilayers under Exposure to Multipole-Wiggler Radiation
   M. Yanagihara, K. Mayama, S. Asaoka, and H. Maezawa, SPIE Proceedings Vol. **1739**, High Heat Flux Engineering (1992) 615-621.
9. Calorimetric Measurements of Power Distribution in Multipole-Wiggler Radiation
   M. Yanagihara, Y. Goto, S. Asaoka, H. Maezawa, and H. Sugawara, SPIE Proceedings Vol. **1739**, High Heat Flux Engineering (1992) 282-287.
10. Beryllium Window and Graphite Filter Assemblies for High Heat Flux Synchrotron Radiation Beamlines at the Photon Factory
    H. Maezawa, S. Asaoka, M. Yanagihara, and Y. Kamiya, SPIE Proceedings Vol. **1739**, High Heat Flux Engineering (1992) 254-265.
11. Test of Holographic SiC Gratings for High-Power Synchrotron Radiation
    E. Ishiguro, H. Maezawa, M. Sakurai, M. Yanagihara, M. Watanabe, M. Koeda, T. Nagano, K. Sano, Y. Akune, and K. Tanino, SPIE Proceedings Vol. **1739**, High Heat Flux Engineering (1992) 592-603.
12. F-Center Formation Efficiency in the Vicinity of the Cl K Edge in KCl at LHeT
    Y. Kondo and M. Yanagihara, Proceedings of Int. Conf. on Defects in Insulating Materials 92.
13. Power Density of Multipole-Wiggler Radiation Measured by Photocalorimetric Method
    M. Yanagihara, Y. Goto, S. Asaoka, H. Maezawa, and H. Sugawara, Proceedings of the Sino-Japan Symposium on Engineering Optics (1992) 176-179.
14. A Soft-X-Ray Imaging Microscope with Multilayer-coated Schwarzschild Optics
    M. Toyoda, Y. Shitani, M. Yanagihara, T. Ejima, M. Yamamoto and M. Watanabe, Proceedings of the Sixth International Conference on X-Ray Microscopy (2000) 363-366.
15. Varied-line-spacing Laminar-type Holographic Grating for the Standard Soft X-ray Flat-field Spectrograph
    M. Koike, T. Namioka, E. Gullikson, Y. Harada, S. Ishikawa, T. Imazono, S. Mrowka, N. Miyata, M. Yanagihara, J.H. Underwood, K. Sano, T. Ogiwara, O. Yoda, and S. Nagai, Proceedings of SPIE Vol. **4146** (2000) 163-170.
16. Thermal Diffusion of Si Atoms at the Interface of Mo/Si Bilayers Studied with a Soft X-ray Emission Microscope
    Y. Shitani, N. Miyata, M. Yanagihara, and M. Watanabe, Opt. Precision Eng. 9 (2001) 446-450.
17. Analytical Designing of Two-aspherical-mirror Anastigmats Permitting Practical Misalignments for Soft-X-ray Imaging
    M. Toyoda, M. Yamamoto, and M. Yanagihara, IPAP Conf. Series **7** 186-188, Himeji (2005.7.26-2005.7.30).

18. Soft X-ray MCD Studies on Interfaces in Fe/Si Multilayers
M. Sugawara, K. Sato, T. Hatano, M. Toyoda, and M. Yanagihara, KEK Proceedings (2006-3) 48-52 Yokohama (2006.7.3-4)
19. Depth Profiling of Interdiffused Layers in Fe/Si Multilayers Using Standing-wave Soft-X-ray Fluorescence Spectroscopy
R. Hamamoto, M. Sugawara, S. Ichikura, and M. Yanagihara, KEK Proceedings (2006-3) 53-57 Yokohama (2006.7.3-4).

Ⅲ. 総説・解説

1. VUV 用光学フィルターの作り方
柳原美広, 放射光　第 1 巻 第 2 号（1988）45-46
2. 軟X線多層膜反射鏡
柳原美広, 大学・高専・公設試験研究機関の研究情報　Vol. 2（1991）24-25
3. 光熱量法による大強度放射光の強度分布測定
柳原美広, 放射光　第 6 巻 第 4 号（1993）463-468
4. 軟X線領域における超薄膜の光学定数
柳原美広, 放射光　第 9 巻 第 1 号（1996）1-14
5. 軟X線多層膜光学素子－放射光科学への応用－
山本正樹、柳原美広、木村洋昭、渡辺 誠, 放射光　第 9 巻 第 2 号（1996）106-130
6. 簡便なミラー表面の形状測定
菅原英直、柳原美広、浅岡聖二、前沢秀樹, 放射光　第 9 巻 第 4 号（1996）335-343
7. 多層膜の軟X線偏光子への応用
柳原美広, 光技術コンタクト　第 35 巻 第 4 号（1997）198-207
8. 軟X線光学薄膜の光学定数
柳原美広, 応用物理　第 66 巻 第 12 号（1997）1350-1356
9. 軟X線発光分光による Mo/Si 多層膜中の「埋れた」界面の結合状態の研究
宮田登、石川禎之、柳原美広、渡邊 誠, フォトンファクトリーニュース 第 18 巻 第 2 号（2000）25-29
10. 多層膜研究の現状
柳原美広, 山下広順, 放射光 第 17 巻　第 5 号 （2004. 9） 270-280
11. Schwarzschild Microscopes in Vacuum Ultraviolet and Soft X-ray Regions
M. Watanabe, M. Yanagihara, T. Ejima, M. Toyoda, Y. Kondo, T. Hatano, T. Tsuru, M. Yamamoto, Nuclear Science and Techniques **16(3)** (2005.6) 129-138.
12. X 線ミラー多層膜
山本正樹, 羽多野忠, 津留俊英, 柳原美廣, 機械の研究 第 57 巻 第 1 号（2005）74-81.
13. X 線結像光学
柳原美広, 光学 第 36 巻 第 4 号（2007. 4）179-180.
14. Multilayer Polarization Elements and Their Applications to Polarimetric Studies in Vacuum Ultraviolet and Soft X-ray Regions
M. Watanabe, T. Hatano, K. Saito, W. Hu, T. Ejima, T. Tsuru, M. Takahashi, H. Kimura, T. Hirono, Z. Wang, M. Cui, M. Yamamoto, and M. Yanagihara, Nuclear Science and Techniques **19(4)** (2008) 193-203.
15. 短波長軟X線域の多層膜技術と顕微鏡応用の新展開
熊谷　寛,　柳原美廣,　レーザー研究 第 38 巻 第 12 号（2010. 12）976-980.
16. 超高精細バイオイメージング用波面補正軟 X 線多層膜ミラーの開発

津留俊英, 羽多野忠, 原田哲男, 豊田光紀, 江島丈雄, 柳原美廣, 山本正樹, 光学 第39巻 第5号（2010.5）3-8.

17. 軟X線顕微鏡とその基盤技術の開発
江島丈雄,羽多野忠,津留俊英,豊田光紀,柳原美廣, X線結像光学ニューズレター 第33号（2011.4）7-9.

Ⅳ. 学会発表（2001年以降の国際会議）

1. Buried Interfaces of Heat-loaded Mo/Si Multilayers Studied by Soft-X-ray Emission Spectroscopy
N. Miyata,T. Imazono,S. Ishikawa,A. Arai,M. Yanagihara,M. Watanabe, *The 13th Int'l Conf. on VUV Rad. Phys.*, Italy, Trieste (2001.7.25).
2. Si $L_{2,3}$ Emission Spectra from the Interfaces in Antiferromagnetically Coupled Fe/Si Multilayers
T. Imazono,N. Miyata,O. Kitakami,M. Yanagihara, *The 13th Int'l Conf. on VUV Rad. Phys.*, Italy, Trieste (2001.7.25).
3. X-ray Emission and Absorption Spectra and Electronic Structure of MgB_2
E.Z. Kurmaev,I.I. Lyakhovskaya,J. Kortus,M. Demeter,T. Imazono,N. Miyata,M. Yanagihara,M. Watanabe,M. Neumann,T. Muranaka,J. Akimitsu, *The 13th Int'l Conf. on VUV Rad. Phys.*, Italy, Trieste (2001.7.25).
4. Thermal Diffusion of Si Atoms at the Interface of Mo/Si Bilayers Studied with a Soft X-Ray Emission Microscope
Y. Shitani,N. Miyata,M. Yanagihara,M. Watanabe, *Int'l Symp. on EUV Lithography*, China, Changchun (2001.8.30).
5. A New Soft-X-ray Polarization Spectrometer Based on a Multilayer-coated Grating
S. Ishikawa, S. Ichikura, T. Imazono, S. Otani, T. Oguchi, M. Yanagihara, *International Symposium on Technologies and Applications of Photoelectron Micro-Spectroscopy with Laser-based VUV Sources*, Japan, Tsukuba (2002.12.3).
6. A polarization spectrometer based on a multilayer-coated laminar grating between 150 and 190 eV
S. Ishikawa, S. Ichikura, K. Sudo, T. Imazono, Y. Hirayama, M. Yanagihra, M. Watanabe, *7th Int. Conf. Phys. X-ray Multilayer Structures*, Japan, Rusutsu (2004.3.7-2004.3.17).
7. Soft-X-ray Fluorescence under Standing-wave Excitation from Interdiffused Layers in Fe/Si Multilayers
S. Ichikura, K. Sudo, R. Hamamoto, M. Yanagihara, *14th Int. Conf. VUV Rad. Phys.*, Australia, Cairns (2004.7.19-7.23).
8. Development of Soft X-ray Wavefront Control Technology for Imaging Multilayer Mirrors
M. Yamamoto, T. Hatano, T. Tsuru, M. Furudate, T.Harada, T. Ohigashi, M. Toyoda, T. Ejima, M. Yanagihara, *2nd International Symposium on Technologies and Applications of Photoelectron Micro-Spectroscopy with Laser-based VUV Sources*, Tsukuba (2005.2.1-2005.2.3).
9. Soft-X-ray Fluorescence Studies of the Standing Waves in Multilayer Coatings
S. Ichikura, R. Hamamoto, K. Sudo, T. Banse, M. Yanagihara, *2nd International Symposium on Technologies and Applications of Photoelectron Micro-Spectroscopy with Laser-based VUV Sources*, Tsukuba (2005.2.1-2005.2.3).
10. Analytical Designing of Two-aspherical-mirror Anastigmat Permitting Practical Misalignments for Soft-X-ray Imaging
M. Toyoda, M. Yamamoto, M. Yanagihara, *The 8th International Conference on X-ray Microscopy*, Japan, Himeji (2005.7.26-2005.7.30).

11. Analytical designing of two-aspherical-mirror anastigmat permitting practical misalignments for soft-X-ray imaging
    M. Toyoda, M. Yamamoto, M. Yanagihara, *The 8th International Conference on The Physics of X-Ray Multilayers Structures*, Japan, Sapporo (2006.3.12-2006.3.16).
12. Depth profiling of interdiffused layers in Fe/Si multilayers using standing-wave soft-X-ray fluorescence spectroscopy
    R. Hamamoto, M. Sugawara, T. Ejima, T. Hatano, M. Yanagihara, *The 8th International Conference on the Physics of X-Ray Multilayer Structures*, Sapporo (2006.3.12-3.16).
13. Design of Aspherical Imaging Optics Tolerating Practical Misalignments for Soft-X-Ray Microscopes
    M. Toyoda, M. Yamamoto, M. Yanagihara, *15th International Conference on Vacuum Ultraviolet Radiation Physics*, Germany, Berlin (2007.7.29-2007.8.3).
14. Development of Transmission-type X-ray Multilayer Mirro Microscope using LPP source
    T. Ejima, H. Murata, M. Toyoda, M. Yanagihara, *15th International Conference on Vacuum Ultraviolet Radiation Physics*, Germany, Berlin (2007.7.29-2007.8.3).
15. X-ray MCD studies for Fe/Si interfaces using standing waves
    M. Yanagihara, K. Sato, T. Jinno, M. Toyoda, T. Hatano, A. Arai, *15th International Conference on Vacuum Ultraviolet Radiation Physics*, Germany, Berlin (2007.7.29-2007.8.3).
16. Analytical Designing of Two-Aspherical-Mirror Optics for Soft X-Ray Imaging
    M. Toyoda, M. Yamamoto, M. Yanagihara, *9th International Conference on X-Ray Microscopy*, Switzerland, Zurich (2008.7.21-2008.7.25).
17. Cluster size dependence of the multiple ionization of Ar clusters irradiated by intense EUV pulses from free electron laser
    H. Iwayama, K. Nagaya, M. Yao, H. Fukuzawa, X.-J. Liu, G. Pruemper, M. Okunishi, K. Shimada, K. Ueda, T. Harada, M. Toyoda, M. Yanagihara, M. Yamamoto, K. Motomura, N. Saito, A. Rudenko, J. Ullrich, L. Foucar, A. Czasch, R. Doerner, M. Nagasono, A. Higashiya, M. Yabashi, T. Ishikawa, H. Ohashi, H. Kimura, *XIV International Symposium on Small Particles and Inorganic Clusters*, Spain, Valladolid (2008.9.15-2008.9.19).
18. Laser power dependence of the multiple ionization of Xe clusters irradiated by intense EUV pulses from free electron laser
    H. Fukuzawa, X.-J. Liu, G. Pruemper, M. Okunishi, K. Shimada, K. Ueda, T. Harada, M. Toyoda, M. Yanagihara, M. Yamamoto, H. Iwayama, K. Nagaya, M. Yao, K. Motomura, N. Saito, A. Rudenko, J. Ullrich, L. Foucar, A. Czasch, R. Doerner, M. Nagasono, A. Higashiya, M. Yabashi, T. Ishikawa, H. Ohashi, H. Kimura, *XIV International Symposium on Small Particles and Inorganic Clusters*, Spain, Valladolid (2008.9.15-2008.9.19).
19. Multiple photoionization of rare gas clusters in intense EUV femtosecond laser pulse from free electron laser
    K. Nagaya, H. Iwayama, M. Yao, H. Fukuzawa, X.-J. Liu, G. Pruemper, M. Okunishi, K. Shimada, K. Ueda, T. Harada, M. Toyoda, M. Yanagihara, M. Yamamoto, K. Motomura, N. Saito, A. Rudenko, J. Ullrich, L. Foucar, A. Czasch, R. Doerner, M. Nagasono, A. Higashiya, M. Yabashi, T. Ishikawa, H. Ohashi, H. Kimura, *XIV International Symposium on Small Particles and Inorganic Clusters*, Spain, Valladolid (2008.9.15-2008.9.19).
20. Cluster size dependence of the multiphoton absorption of argon clusters in intense EUV-FEL pulses
    H. Iwayama, K. Nagaya, M. Yao, H. Fukuzawa, X. J. Liu, G. Pruemper, M. Okunishi, K. Shimada, K. Ueda, T. Harada, M. Toyoda, M. Yanagihara, M. Yamamoto, K. Motomura, N.

Saito, A. Rudenko, J. Ullrich, L. Foucar, A. Czasch, R. Doerner, M. Nagasono, A. Higashiya, M. Yabashi, T. Ishikawa, H. Ohashi, H. Kimura, *11th International Coference on Multiphoton Processes*, Germany, Heidelberg (2008.9.18-2008.9.23).

21. Dignostic of the harmonic contribution in the EUV-FEL beam using recoil-ion momentum imaging
    X. J. Liu, G. Pruemper, H. Fukuzawa, M. Okunishi, K. Shimada, K. Ueda, T. Harada, M. Toyoda, M. Yanagihara, M. Yamamoto, N. Saito, K. Motomura, H. Iwayama, K. Nagaya, M. Yao, A. Rudenko, J. Ullrich, L. Foucar, A. Czasch, R. Dorner, M. Nagasono, A. Higashiya, M. Yabashi, T. Ishikawa, R. Tanaka, H. Ohashi, H. Kimura, *11th International Coference on Multiphoton Processes*, Germany, Heidelberg (2008.9.18-2008.9.23).
22. Interaction of intense EUV femtosecond laser pulses from free electron laser with rare gas clusters
    K. Nagaya, H. Iwayama, M. Yao, H. Fukuzawa, X. J. Liu, G. Pruemper, M. Okunishi, K. Shimada, K. Ueda, T. Harada, M. Toyoda, M. Yanagihara, M. Yamamoto, K. Motomura, N. Saito, A. Rudenko, J. Ullrich, L. Foucar, A. Czasch, R. Doerner, M. Nagasono, A. Higashiya, M. Yabashi, T. Ishikawa, H. Ohashi, H. Kimura, *11th International Coference on Multiphoton Processes*, Germany, Heidelberg (2008.9.18-2008.9.23).
23. Power dependence of the multiple ionization of xenon clusters irradiated by EUV-FEL pulses
    H. Fukuzawa, X. J. Liu, G. Pruemper, M. Okunishi, K. Shimada, K. Ueda, T. Harada, M. Toyoda, M. Yanagihara, M. Yamamoto, H. Iwayama, K. Nagaya, M. Yao, K. Motomura, N. Saito, A. Rudenko, J. Ullrich, L. Foucar, A. Czasch, R. Doerner, M. Nagasono, A. Higashiya, M. Yabashi, T. Ishikawa, H. Ohashi, H. Kimura, *11th International Coference on Multiphoton Processes*, Germany, Heidelberg (2008.9.18-2008.9.23).
24. Development of two-dimensional detector for high resolution soft X-ray images
    T. Ejima, S. Ogasawara, T. Hatano, M. Yanagihara, M. Yamamoto, *The 10th International Conference on Synchrotron Radiation Instrumentation*, Australia, Melbourne (2009.9.27-2009.10.2).
25. Development of LPP light source for extreme ultraviolet microscope
    T. Ejima, S. Aizawa, M. Furudate, T. Hatano, M. Yanagihara, *37th Internatinal* Conference *on Vacuum UltraViolet and X-ray Physics*, Canada, Vancouver (2010.7.11-2010.7.16).
26. Development of Wide Field of View EUV Microscope Using Normal-Incident Multilayer Optics with LPP Light Source
    F. Ishida, T. Ejima, M. Toyoda, T. Tsuru, T. Hatano, M. Yanagihara, H. Mizutani, *The 10th international conference on x-ray microscopy*, USA, Chicago (2010.8.15-2010.8.20).
27. Novel multilayer-mirror optics for a whole tissue imaging
    M. Toyoda, T. Jinno, T. Harada, T. Hatano, M. Yanagihara, *The 10th international conference on x-ray microscopy*, Chicago (2010.8.15-2010.8.20).
28. "Super-Hierarchical" Microscope in EUV Region
    T. Ejima, M. Toyoda, T. Tsuru, T. Hatano, M. Yanagihara, *The 10th international conference on x-ray microscopy*, USA, Chicago (2010.8.15-2010.8.20).
29. At-Wavelength EUV Lithography Mask Observation Using a High-Magnification Objective with Three MultilayerMirrors
    M. Toyoda, K. Yamasoe, T. Hatano, M. Yanagihara, A. Tokimasa, T. Harada, T. Watanabe, H. Kinoshita, *The 56th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication*, USA, Hawaii (2012.5.29-2012.6.1).
30. Development of soft X-ray contact microscope for in-situ identification of organelles
    T. Ejima, Y. Neichi, F. Ishida, M. Yanagihara, *The 11th International conference on*

synchrotron radiation instrumentation, France, Lyon (2012.7.9-2012.7.13).

31. Development of soft X-ray contact microscope for in-situ identification of organelles
    T. Ejima, Y. Neichi, F. Ishida, M. Yanagihara, *The 11th International conference on synchrotron radiation instrumentation*, France, Lyon (2012.7.9-2012.7.13).
32. Investigation of sample preparation methods for EUV imaging of fixed bio-cells
    T. Ejima, F. Ishida, Y. Neichi, M. Yanagihara, *The 11th International conference on synchrotron radiation instrumentation*, France, Lyon (2012.7.9-2012.7.13).
33. Investigation of sample preparation methods for EUV imaging of fixed bio-cells
    T. Ejima, F. Ishida, Y. Neichi, M. Yanagihara, *The 11th International conference on synchrotron radiation instrumentation*, France, Lyon (2012.7.9-2012.7.13).
34. Absorption spectra of organelles in Leydig cells of mice testes
    T. Ejima, Y. Neichi, M. Yanagihara, M. Ishino, M. Kado, K. Yasuda, S. Tamotsu, *The 11th international conference on x-ray microscopy*, China, Shanghai (2012.8.6-2012.8.10).
35. Comparison of embedding and staining methods for bio-cell imaging in EUV region
    T. Ejima, Y. Neichi, F. Ishida, M. Yanagihara, *The 11th international conference on x-ray microscopy*, China, Shanghai (2012.8.6-2012.8.10).
36. Development of SX contact microscope for in-situ observation of bio-cells
    Y. Neichi, T. Ejima, F. Ishida, M. Yanagihara, M. Ishino, M. Kado, *The 11th international conference on x-ray microscopy*, China, Shanghai (2012.8.6-2012.8.10).
37. An EUV Mask-imaging Microscope for Lithography Generations with sub-16 nm Half Pitch
    M. Toyoda, K. Yamasoe, K. Uchida, M. Yanagihara, A. Tokimasa, T. Harada, H. Kinoshita, T. Amano, T. Terasawa, *25th International Microprocesses and Nanotechnology Conference*, Japan, Kobe (2012.10.30-2012.11.2).
38. Development of a grazing-incidence condenser for SX microscope
    T. Ejima, T. Hatano, K. Ohno, T. Fukayama, S. Aihara, M. Yanagihara, *the 38th International conference on Vacuum Ultraviolet and X-ray Physics*, China, Hefei (2013.6.12-2013.6.19).
39. Design, fabrication, and test of an EUV mask imaging microscope for lithography generations with sub-16 nm half pitch
    M. Toyoda, K. Yamasoe, M. Yanagihara, T. Amano, T. Terasawa, A. Tokimasa, T. Harada, T. Watanabe, H. Kinoshita, *2013 International Symposium on Extreme Ultraviolet Lithography*, Japan, Toyama (2013.10.6-2013.10.10).
40. Development of a grazing-incidence condenser for large NA objective
    T. Ejima, T. Hatano, K. Ohno, T. Fukayama, S. Aihara, M. Yanagihara, *The 12th Symposium on X-ray Imaging Optics*, Osaka (2013.11.18).

Ⅴ. その他

○データベース

1. 超薄膜の軟X線光学定数
   印刷体では下記報告書に掲載.
   超薄膜の軟X線光学定数
   柳原美広、曹　健林、山本正樹、荒井　彰、古舘三七二、波岡　武
   東北大学科学計測研究所報告　第 41 巻 第 1 号（1992）1−26